

## Taxonomic Notes on *Ophiopogon* of South Asia VII

Noriyuki TANAKA

Department of Education, School of Liberal Arts, Teikyo University,  
Ôtsuka 359, Hachijōji, Tokyo, 192–0395 JAPAN

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*Ophiopogon intermedius* D. Don occurring in south Asia is taxonomically reinvestigated. *Ophiopogon clarkii*\*, *O. grandis*\*, *O. lushuiensis*\*, *O. zingiberaceus*\*, *O. merrillii*\*, *O. acaulis* (= *Chloopsis acaulis*)\*, *O. wallichianus* (= *Flueggea wallichiana*), *O. bodinieri*, *O. indicus* and *Flueggea jacquemontiana* are treated as synonyms of *O. intermedius* (new synonyms are asterisked). All the varieties of *O. intermedius* and *O. wallichianus* described by Hooker (1892) are also treated as the same taxon as *O. intermedius*. Don's *O. spicatus* may also be conspecific with *O. intermedius*, as reported in some previous papers. *Ophiopogon intermedius* is an exceedingly variable species with an extensive range of distribution in Asia. (Continued from J. Jpn. Bot. 75: 127–136)

**Key words:** distribution, *Ophiopogon intermedius*, south Asia, taxonomy

### (14) *Ophiopogon intermedius* in southern Asia

*Ophiopogon intermedius* was described by D. Don (1825) based on Wallich's specimen from Nepal. In Wallich's Catalogue (1832), entry number 5139A is registered as *O. japonicus* from Nepal. Bailey (1929) suggested that *O. intermedius* had been founded on specimen 5139A, and the specimen preserved in the Kew Herbarium is probably its type or cotype. However, as Hara (1966) has pointed out, Don's description (1825) of *O. intermedius* includes some points which are inconsistent with specimen 5139A at Kew. In Don's description, there is the following passage on the leaves of *O. intermedius*: "*Folia palmaria, angusta, vix lineam lata.*" This passage is not consistent with the leaves of specimen 5139A at Kew (Fig. 1), since in this specimen most leaves are longer and wider than those described by Don, reaching about 45.5 cm long and 8 mm wide (in the

right individual on this sheet, the upper part of most leaves are lost) [I examined only one sheet of 5139A preserved at Kew (Fig. 1). A photograph of another sheet of 5139A (K) is reproduced in Bailey's paper (1929). Hara (1966) noted that in the Wallich Herbarium at Kew there is a specimen (no. 5139A) collected by Wallich in Nepal in 1821. The leaves of this specimen are reported by Hara to be 4–7 mm wide]. If the leaves of *O. intermedius* are just like the above passage by D. Don (*folia palmaria...*), *O. intermedius* must be a very small plant with leaves about 8 cm long (= palmar width). As the scape of this species is also described by him as half as long as the leaves, it must be about 4 cm in height. Following the above passage, Don also noted the difference between *O. japonicus* (Thunb.) Ker Gawl. and *O. intermedius*. According to him, *O. japonicus* is a smaller plant than *O. intermedius*. Therefore, *O.*

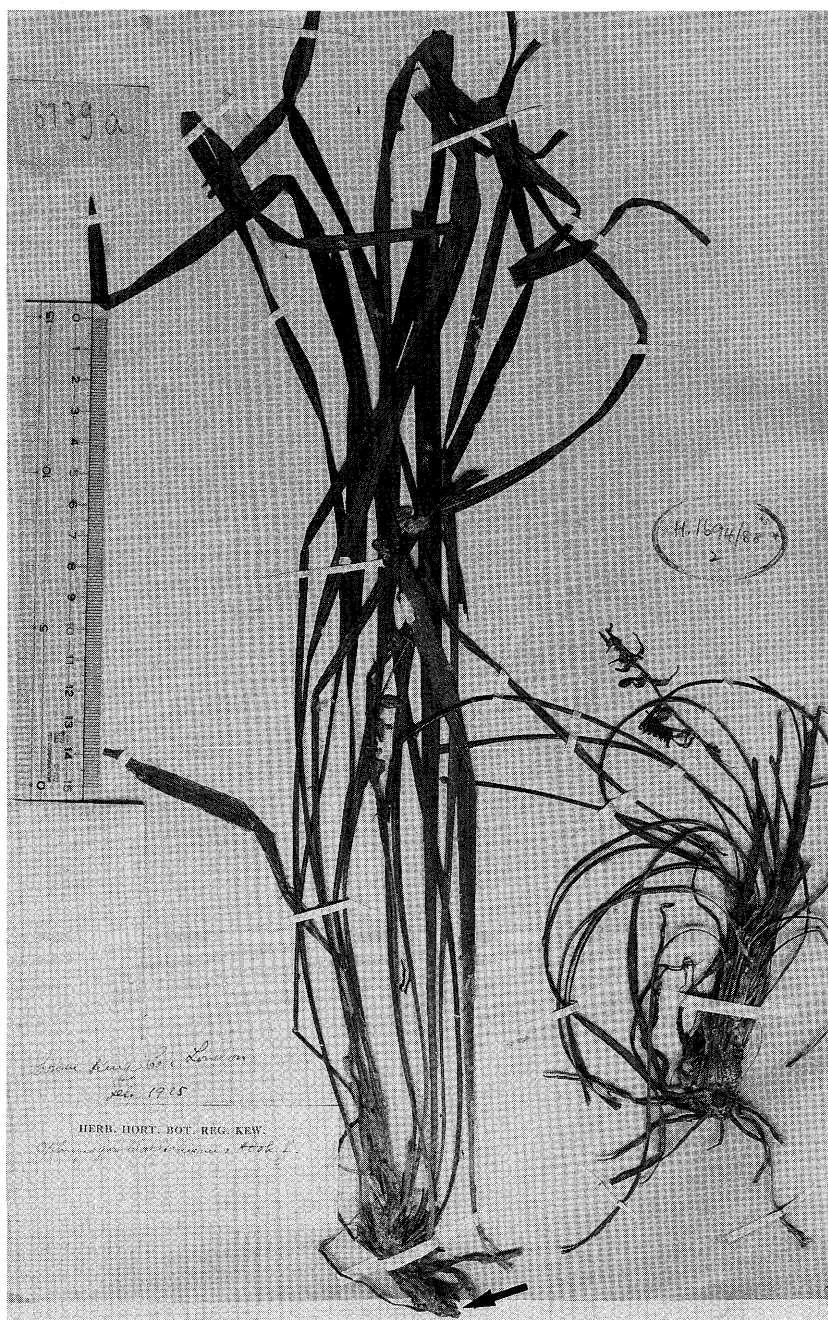


Fig. 1. *Ophiopogon intermedius* from Nepal (N. Wallich 5139A, K). This species is regarded as having been founded on Wallich's specimen 5139A (Bailey 1929). However, the original description by D. Don (1825) is not fully consistent with the specimen here shown (see the text). The arrow indicates a stolon which is shortly trimmed.

*japonicus* must also be taken as an extremely small plant with leaves shorter than about 8 cm long. However, this is rather contradictory to the fact known for *O. japonicus*, as the latter is really not such an extremely small plant; its leaves are reported to be 10–20 (–30) cm long by Ohwi (1965). In tracing the cause for this contradiction, the above passage by Don “*folia palmaria...*” seems noteworthy, since it accords to some degree to the leaves of *O. japonicus*. For example, the leaves of *O. japonicus* are described by Thunberg (1784, under *Convallaria japonica*  $\beta$ ) as: *Folia... palmaria vel ultra, semilineam lata*. This description resembles that by Don for the leaves of *O. intermedius*. Because of this similarity (between the two descriptions), there seems to be the following possibility: the above passage by D. Don (*folia palmaria...*) was really not for the leaves of *O. intermedius*, but for those of *O. japonicus*. The passage was erroneously inserted by him in the description of *O. intermedius*. If this assumption is correct, there is no necessity to regard *O. intermedius* as such a very small plant with leaves about 8 cm long.

Meanwhile, in D. Don’s description of *Ophiopogon intermedius*, there are also some other points which are not exactly consistent with specimens 5139A at Kew. For example, the bracts of this species are described as linear and scabrous on the margin. But, in the specimen I examined (Fig. 1) they are rather lanceolate and entire. This species is also described by him as having a few-flowered raceme, but especially in the specimen shown in Bailey’s paper (1929, Fig. 12) the racemes are rather many-flowered. Because of these contradictions, there is a good possibility that the exact specimen(s) on which *O. intermedius* was founded [i.e., type specimen(s)] is neither the sheet I examined (Fig. 1) nor that quoted in Bailey’s paper (1929) (both Wallich 5139A at Kew). Hooker (1892) thought that Don had founded

*O. intermedius* on Wallich 5139C. But his view has been negated by Bailey (1929), since 5139C is regarded as not from Nepal. I have not seen specimen 5139C as yet. It appears that we still need to search for the specimen(s) on which *O. intermedius* was really founded. According to the result of the present survey, *O. intermedius* is an exceedingly variable species, so it seems likely that Wallich’s collection of specimens from Nepal (5139A) includes some different forms of *O. intermedius*. The relatively small-flowered form of this species has often narrow bracts with slightly serrulate (–scabrous) margins and has a few flowers with a style nearly equalling the perianth (e.g., Long et al. 949, Sikkim, E; Chand 7838, Assam, L; Polunin et al. 4509, Nepal, E), just like the plant described in the protologue of *O. intermedius*. So it is presumed that the exact specimen(s) on which *O. intermedius* was founded [type(s)] is more or less like this form. Even if specimens 5139A at Kew are not the types of *O. intermedius*, they can be identified as *O. intermedius*, since they are not so markedly distinct from the original description. In specimen 5139A shown in Fig. 1, at least the left individual has relatively large flowers and a stolon which is shortly trimmed. So this specimen appears to be very close to or virtually identical with the form called *O. clarkei* Hook.f., which is reduced to a synonym of *O. intermedius* in this paper (see below).

Don (1825) recorded *Ophiopogon spicatus* in his *Prodromus Florae Nepalensis*. True *O. spicatus* (Thunb.) Ker Gawl. is now usually treated under *Liriope* [e.g., Wright 1903, Wang and Tang 1951, Dai 1978 (cf. Chen et al. 1993, for the authorship), Hara 1984], and according to Wang and Tang (1951) the correct name of this species is *Liriope platyphylla* F.T.Wang & Ts.Tang. Don’s *O. spicatus* is from the higher altitudes of Nepal, as he noted. But, so far there has been

no confirmative evidence for the spontaneous occurrence of *Liriope* in Nepal. In D. Don's descriptions of both *Ophiopogon* and *O. spicatus*, there are several points which are inconsistent with true *Liriope*. For instance, he described *Ophiopogon* as having cernuous flowers and very short filaments, and *O. spicatus* as having a style which is longer than the perianth. These descriptions are highly discordant with the facts known for *Liriope*, since in the latter genus the flowers are not drooping, the filaments are relatively long (nearly as long as or longer than the anthers), and the style is shorter than the perianth. Therefore, in his description of *Ophiopogon* any species of true *Liriope* is virtually not included, and his *O. spicatus* is no doubt a species of *Ophiopogon* in the strict sense. Both Baker (1879) and Hara (1978) regarded Don's *O. spicatus* as conspecific with *O. intermedius* (Baker treated this species under *Flueggea*). It also seems to me that they are the same species.

Don's *Ophiopogon spicatus* agrees in many respects with the two specimens of Wallich 5139A at Kew mentioned earlier [one is the sheet I examined (Fig. 1) and the other is that quoted in Bailey's paper (1929)]. However, the following point is not perfectly consistent between Don's description and the two specimens at Kew; the scape of *O. spicatus* is described by D. Don as often longer than the leaves. But, in these specimens the scapes are rather shorter than the leaves.

*Flueggea wallichiana* described by Kunth (1850) was later transferred by Hooker (1892) to *Ophiopogon*. Hooker (1892) thought that this species had been founded on Wallich's specimen 5139A. But, as pointed out by Bailey (1929), this specimen from Nepal (cf. Wallich's Catalogue, 1832) cannot be the type of *F. wallichiana*, since it is explicitly indicated in the protologue of *F. wallichiana* that this species was founded on Wallich's specimen 5139B from Silhet (now

eastern Bangladesh).

Kunth examined Wallich's specimen 5139B in the Herbarium at Berlin. Unfortunately this specimen is not extant there now (Prof. Dr. P. Hiepko, former director of the Herbarium of 'Botanischer Garten und Botanisches Museum Berlin-Dahlem' (B), informed me of this in his letter dated 17 Sept. 1993. Probably the specimen was destroyed in 1943, as he wrote). However, its photograph is reproduced in Bailey's paper (1929). Another sheet of Wallich 5139B is preserved in the Kew Herbarium, and I have had an opportunity to examine it. Judging from these materials, *Ophiopogon wallichianus* seems not to differ significantly from *O. intermedius*. Accordingly, these two species are regarded here as conspecific. The same treatment has also been made by Hara (1978).

Both *Flueggea jacquemontiana* and *F. dubia* were described by Kunth (1850) from eastern India. These two species have often been regarded as synonymous with *Ophiopogon intermedius* (e.g., Baker 1879, under *Flueggea*; Hooker 1892). Judging from the original descriptions of both *F. jacquemontiana* and *F. dubia*, it is likely that the two species are synonymous with *O. intermedius*. However, in the description of *F. dubia* there is one passage which contradicts our knowledge of *Ophiopogon*. That is, *F. dubia* is described as possessing extrorse anthers. But, as far as I know, any species of *Ophiopogon* has introrse anthers. This contradiction must be solved in the future by examining its type specimen.

*Ophiopogon clarkei* was described by Hooker (1892) from Sikkim. Its typical form (Fig. 2) has stolons, relatively short scapes, several comparatively large flowers which are usually solitary in the axils of bracts, and relatively long staminal filaments for the genus. In the material available, the specimens assignable to *O. clarkei* are from Nepal (e.g., Kanai et al., TI 723532), Sikkim



Fig. 2. A syntype of *Ophiopogon clarkei* (Sikkim, C. B. Clarke 12184, K).

(India) [e.g., Clarke 12184, syntype, K (Fig. 2); Gamble 10421, K; Hara et al., TI 69623], Darjeeling (India) (e.g., Hara et al., TI 69624), eastern India (e.g., Kingdon-Ward

17613, BM), Myanmar (e.g., Kingdon-Ward 22293, BM) and Tibet (Xizang, China) (e.g., Ni et al. 113, 702, PE). This species is also recorded from Bhutan (Noltie 1994).

It is true that the typical form of *Ophiopogon clarkei* (Fig. 2) looks distinct from the other species. But, in fact, the demarcation between *O. clarkei* and *O. intermedius* (Don 1825) is rather unclear. Hara (1978) reported that the two species differ in floral size; viz., in *O. intermedius* the tepals are 4.5–6 mm long, while in *O. clarkei* they are 7–8 mm long. However, in the material at hand, the tepals (perianth lobes) of *O. intermedius* vary from (2.5–) 3 to 10 mm long (including those of *O. parviflorus* which can be reduced to *O. intermedius*, as stated below), and those of the specimens assignable to *O. clarkei* vary from about 5.5 to 10 mm long. So the tepals of the two species overlap in length with each other; in other words, the flowers of *O. clarkei* are not necessarily so large [e.g., the tepals of the specimens Ni et al. 113 and 702 from Xizang are ca.5.8–6 mm long; those of the left individual on the sheet of Starling et al. 5 from Sikkim (K) (Fig. 3) are ca.5.5–6 mm long] as compared with those of *O. intermedius*. Also in the specimens assignable to *O. clarkei* the number of flowers in the axils of bracts varies from 1 to 3. That is, the inflorescence of *O. clarkei* is not necessarily few-flowered or loose [e.g., Starling et al. 5 from Sikkim, K (Fig. 3); Hooker s.n. from Sikkim, 6–9000 ft, no date, K]. Hooker (1892) reported that the filaments of *O. clarkei* are one-third the length of the anther. But, this proportion is not always constant in this species; it is often below one-third [e.g., in Kingdon-Ward 22293 from West Central Myanmar (BM), the proportion is less than one-fourth], as in many specimens of *O. intermedius*. Hooker (1892) also described the leaves of *O. clarkei* as slender, being 1/8 inches (= ca.3.2 mm) in width (cf., Fig. 2). But actually they vary in width from about 2.5 to 9.5 mm. So the leaves of this species are not constantly narrow. Further, there are some specimens which bear no stolons, though they look very close to *O. clarkei* in

many respects (e.g., Hara et al. 3053, TI; Hara et al., TI 69636). From these observations, *O. clarkei* and *O. intermedius* seem not to be clearly delimited. Accordingly, *O. clarkei* is treated here as conspecific with *O. intermedius*.

*Ophiopogon grandis* was described by Smith (1921) from Yunnan (Fig. 4), south-east Tibet and northern Myanmar. This species is characterized by the relatively large flowers (in the material at hand the tepals are about 5.2–10 mm long; in the protologue of this species they are described as 11–12 mm long), by the elongate rhizome which is often stout, and by the leaves which are often many and long (to ca.88 cm). The typical form of *O. grandis* (Fig. 4) may look somewhat distinct from the other species, but in fact this species seems basically identical with *O. clarkei* in many respects. The stolon of *O. clarkei* is often described as slender (e.g., Dai and Chen 1978), and a syntype of this species (Fig. 2) also bears such a stolon. But, actually *O. clarkei* often has a stout stolon (e.g., Treutler 425, Sikkim, K) (cf. Noltie 1994) like that of the typical *O. grandis* (Fig. 4). It seems that the typical *O. grandis* represents a robust form of *O. clarkei*. At this stage of my research, I cannot find any significant difference in both floral and vegetative characters between *O. grandis* and *O. clarkei*, so I regard them as the same species. As aforementioned, since *O. clarkei* seems not clearly demarcated from *O. intermedius*, *O. grandis* is, consequently, treated as a synonym of *O. intermedius*.

In the meantime, there is a wide range of variation in the leaf width of the specimens assignable to *Ophiopogon grandis* [e.g., Pa 17402, N Myanmar, K (Fig. 5); Kermode 17207, N Myanmar, K; Kingdon-Ward 20983, N Myanmar, K; Keenan et al. 3155, 3232A, N Myanmar, K; Forrest 7961, 18319 (Fig. 4), 24484, all from Yunnan, E; Wu 6780, W Yunnan, KUN; Nu-jiang Exped.



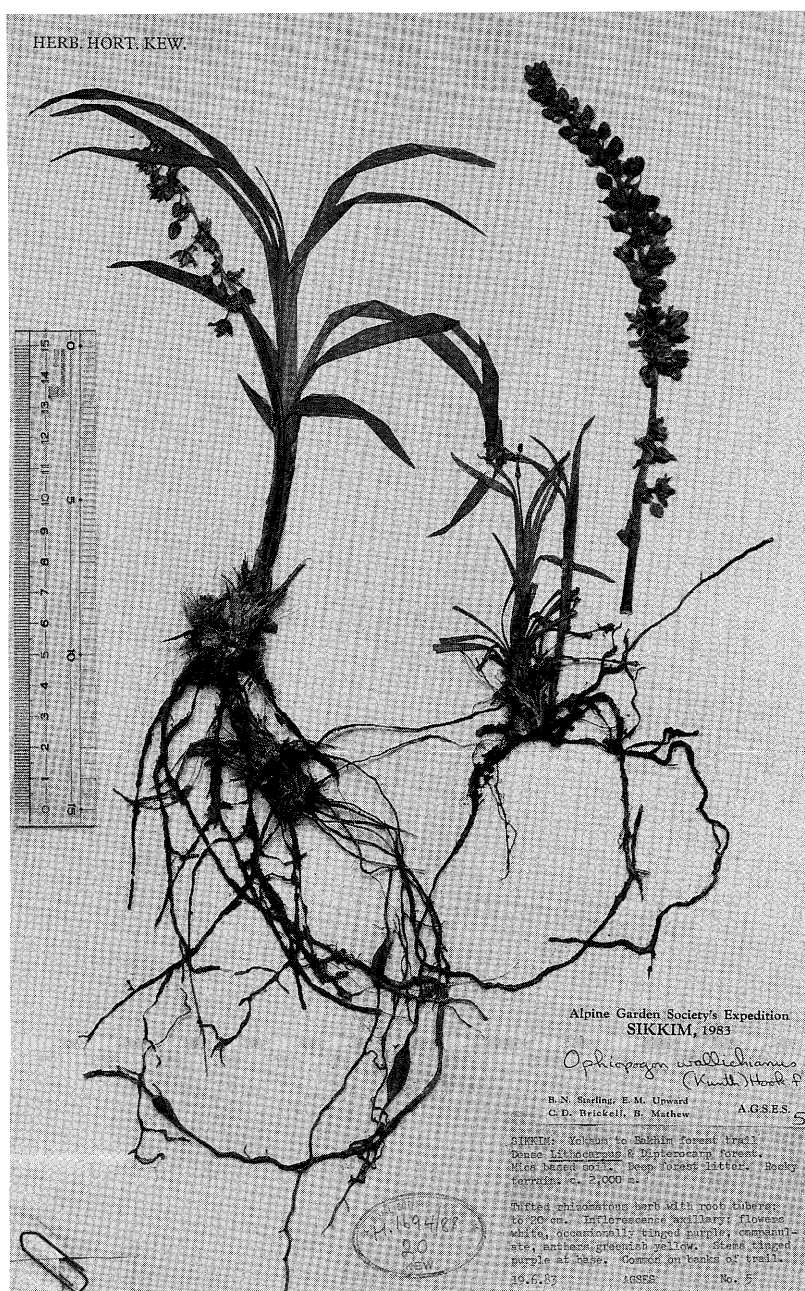


Fig. 3. *Ophiopogon intermedius* from Sikkim (B. N. Starling et al., A.G.S.E.S. 5, K). At least the left individual has an elongate rhizome or a stolon. This specimen may be identified as *O. clarkei*, but the latter is not clearly delimited from *O. intermedius* (see the text).



Fig. 4. A syntype of *Ophiopogon grandis* (Yunnan, G. Forrest 18319, E).

Team 1811, 791884, NW Yunnan, KUN]. Of these, the narrow-leaf form from northern Myanmar [e.g., Pa 17402, K (Fig. 5); Kermode 17207, K] and northwestern

Yunnan (e.g., Nu-jiang Exped. Team 1811, 791884, KUN) corresponds to *O. lushuiensis* S.C.Chen (1988), described from northwestern Yunnan. According to Chen (1988), *O.*



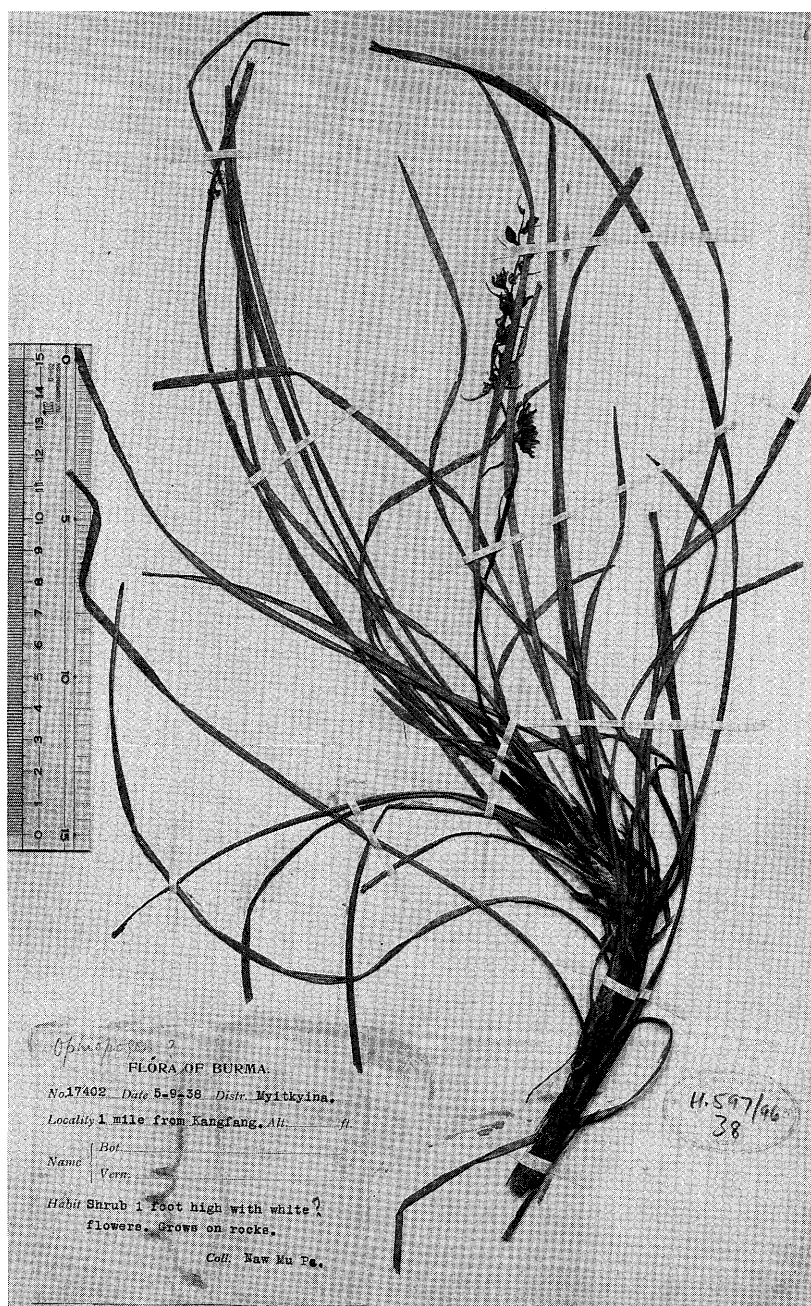


Fig. 5. *Ophiopogon intermedius* from northern Myanmar (N. M. Pa 17402, K). This specimen corresponds to *O. lushuiensis* described from northwestern Yunnan, China. But, *O. lushuiensis* can be reduced to *O. intermedius*.

*grandis* (Fig. 4) and *O. lushuiensis* (Fig. 5) can be distinguished from each other by the

leaf width (viz., in *O. grandis* the leaves are broad to 7–11 mm wide, whereas in *O.*

*lushuiensis* they are 2–3 mm wide) and by some characters of bracts (viz., in *O. grandis* the lowest bract is 2–4 cm long, purplish in the median part and pale and membranous at the margin, whereas in *O. lushuiensis* it is 1–1.5 cm long and pale green or pale greenish brown after drying). In the specimens referable to *O. grandis* cited above, the leaf width varies almost continuously from 2 to 10 mm, and there is no significant difference in the bracts between the wide-leaf form and the narrow-leaf form. For example, specimen Pa 17402 (K) (Fig. 5) has narrow leaves which are 2–3 mm wide, but its bracts are purplish in the median part and scarious at the margin; i.e., the bracts of the narrow-leaf form of *O. grandis* (= *O. lushuiensis*) are not necessarily like those described by Chen (1988) for *O. lushuiensis*. The lowest bract of this specimen is about 1.9 cm long. While, in the two syntypes of *O. grandis* [Forrest 7961, 18319 (Fig. 4), both from Yunnan, E], the lowest bracts are about 1.2–1.5 cm long. That is, the lowest bract of *O. grandis* is not necessarily 2–4 cm long. Further, Smith (1921) reported in the protologue of *O. grandis* that the lower bracts are 10–12 mm long.

From these observations, *Ophiopogon lushuiensis* seems not so distinct from *O. grandis*. *Ophiopogon grandis* is also recorded from Guizhou, China (Dai and Chen 1978).

Hooker (1892) described *Ophiopogon intermedius* var. *parviflorus* from Sikkim, Khasia and Manipur (Munnipore). Later this variety was treated in specific rank by Hara (1965). Hara (1978) reported that this species, *O. parviflorus* (Hook.f.) H.Hara, occurs in the Himalayas from Nepal to Bhutan and in Assam (Khasia). I confirmed in the material available that the typical form of *O. parviflorus* occurs in Nepal (e.g., Kanai et al., TI 723525; Hara et al., TI 6304386; Polunin et al. 4509, E), Sikkim (e.g., Long et al. 949, E), Darjeeling [e.g., Hara et al., TI

69629; Clarke 26821A (lectoparatype), 26998C (isolectotype, Fig. 6), K], Bhutan (e.g., Hara s.n., Ritang Valley, TI; Noltie 12, E), Assam (Khasi Hills) (Chand 7100, 7102, L), southern India (Schmidt 31, BM) and Myanmar (e.g., Kingdon-Ward 22381, in part, BM).

According to Hara (1978), *Ophiopogon parviflorus* can be distinguished from *O. intermedius* in the following floral characters: in *O. parviflorus* the tepals are 3–4 mm long and the anthers 1–1.5 mm long, while in *O. intermedius* the tepals are 4.5–6 mm long and the anthers 2–4 mm long. However, in my observation, the gap between *O. parviflorus* and the small-flowered form of *O. intermedius* is rather unclear, due to a continuous variation in these characters. In addition, some other species like *O. scaber* Ohwi (Ohwi 1934, 1943) and *O. merrillii* Masam. (Fig. 9), which are reducible to *O. intermedius* [*O. scaber* was reduced to *O. intermedius* by Dai and Chen (1978); for *O. merrillii* see below], also have small flowers [in *O. scaber* the perianths are 3–4 mm long and the anthers are scarcely 2 mm long, according to Ohwi (1934). In *O. merrillii* the tepals are 3.5–3.7 mm long and the anthers 2 mm long [Santos s.n., Bureau of Science no. 32070, L (Fig. 9); in the protologue of *O. merrillii* (Masamune 1937), it is reported that the tepals are ca.4.5 mm long and the anthers ca.2.5 mm long]. *Ophiopogon xiaokuai* Z.Y.Zhu, which was described from Sichuan, China, and seems to be close to *O. intermedius*, also has relatively small flowers [the tepals are 3.5 mm long and the anthers 2.5 mm long, according to Zhu (1994)]. From these observations, *O. parviflorus* seems not to differ so markedly from *O. intermedius*. These two species are, accordingly, treated here as the same species. Noltie (1994) reduced *O. parviflorus* to *O. wallichianus*, but in my view the latter can also be reduced to *O. intermedius*, as mentioned earlier.

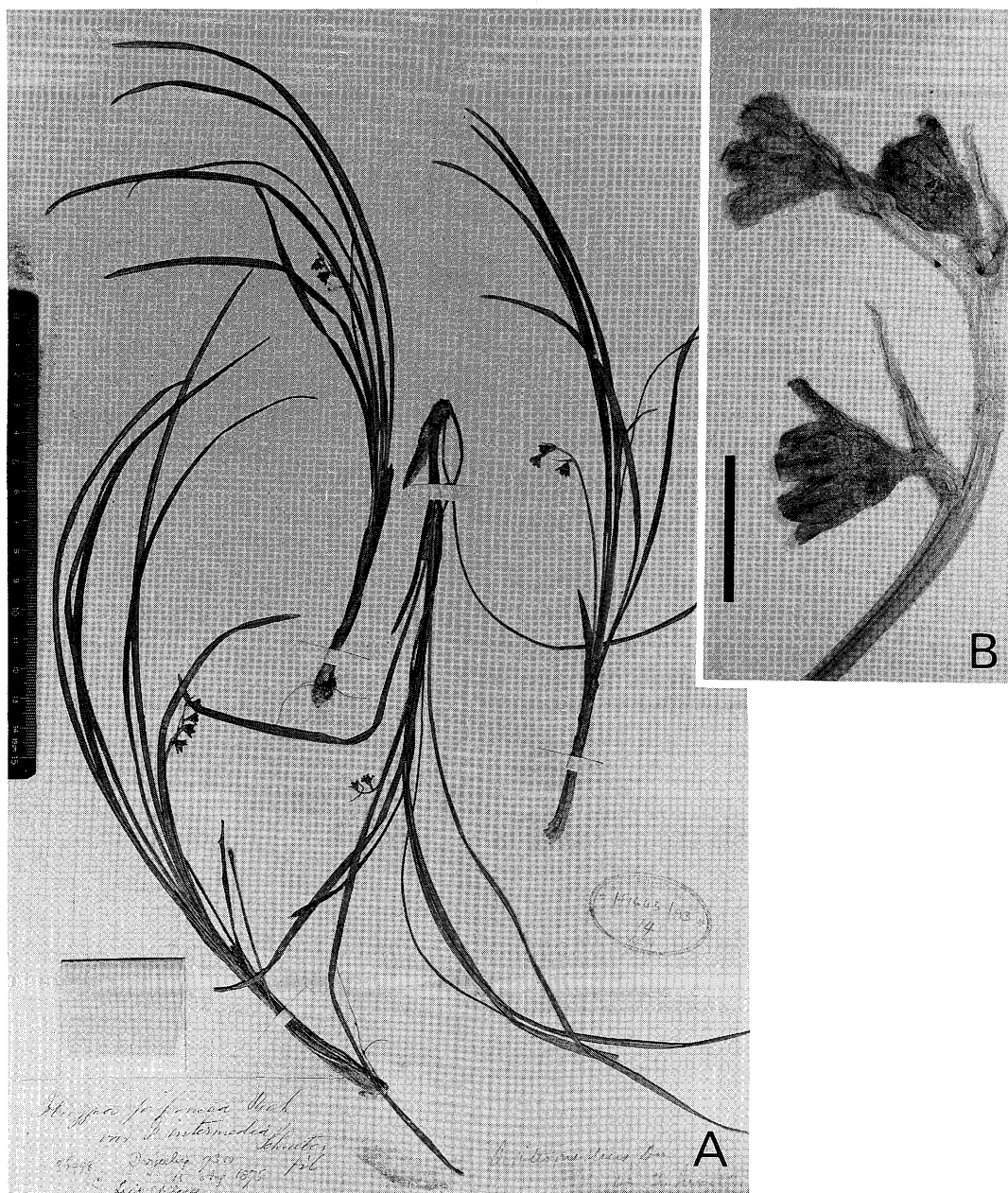


Fig. 6. Isolectotype of *Ophiopogon intermedius* var. *parviflorus* (Darjeeling, C. B. Clarke 26998C, K). A. Habit. B. Close-up of an inflorescence. Scale bar in B = 5 mm.

*Ophiopogon zingiberaceus* described from Sichuan and Yunnan also has relatively small flowers with tepals 3–5 mm long and anthers 2.5–3 mm long (cf. Dai and Chen

1978, Zeng 1991, Yang 1997). It is regarded as a unique feature that this species has a knobbly, ginger-like stout rhizome. However, in my observation, *O. parviflorus* also

tends to have such a knobbly stout rhizome almost comparable to that of *O. zingiberaceus* [e.g., Kanai et al., Nepal, TI 723525; Hara et al., Nepal, TI 6304386; Polunin et al. 4509, Nepal, E (Fig. 7). Some living plants from Bhutan (Sinclair & Long 5027, E) and Darjeeling (India) (Cave s.n., E), which are now cultivated at our university (the plants were gifts from the Royal Botanic Gardens, Edinburgh), also have such knobbly stout rhizomes]. In both floral and vegetative characters, there seems to be no significant difference between *O. zingiberaceus* and *O. parviflorus*. *Ophiopogon zingiberaceus* is therefore regarded here as conspecific with *O. parviflorus*. As stated earlier, *O. parviflorus* is also not clearly demarcated from *O. intermedius*, *O. zingiberaceus* is consequently reduced to *O. intermedius*.

Hooker (1892) also described several other varieties under *Ophiopogon intermedius* and *O. wallichianus* (cf. the synonymy list below). As he noted himself, each variety seems not to be clearly delimited. So, in this paper these varieties are reduced to synonyms of *O. intermedius*.

Noltie (1994) recorded '*Ophiopogon cf. bodinieri* H. Lévl.' from Bhutan. I examined several specimens of it [e.g., Ludlow et al. 19619, E; Grierson & Long 1019, E (Fig. 8); Ludlow & Sherrieff 3188, E; Nakao 443, 709, KYO; Kanai et al. 1473, TI; all from Bhutan]. These specimens are assigned to *O. bodinieri*, according to the taxonomic account by Dai and Chen (1978), and I also think that they can be identified as *O. bodinieri* in some respects (e.g., these specimens have slender stolons like *O. bodinieri*). However, the basic habits of these specimens seem not to be so distinct from those of *O. intermedius*. Accordingly, these specimens or *O. bodinieri* is assignable to *O. intermedius*. The reduction of *O. bodinieri* to *O. intermedius* has already been made by McKean (1986), and I agree with him on this

reduction. Further notes on *O. bodinieri* will be given elsewhere.

*Ophiopogon merrillii* was described by Masamune (1937) from the Philippines. Until then its plants had often been assigned to *O. japonicus* (Thunb.) Ker Gawl. (e.g., Merrill 1923). *Ophiopogon merrillii* (Fig. 9) has narrow leaves, a slender long scape with a short terminal raceme of a few small flowers, and slender stolons. In many respects this species closely resembles *O. formosanus* Ohwi (Ohwi 1934, 1943). At the same time, *O. merrillii* appears to be not so distinct from the small-flowered form of *O. intermedius*. Therefore, *O. merrillii* is treated here within the range of variation of *O. intermedius*. Although Jessop (1979) reduced *O. merrillii* to *O. japonicus*, the roots of the former are significantly more slender than in the latter, and in several other respects also (e.g., the shape of styles) the two species are markedly distinct from each other.

In 'Flora Malesiana', Jessop (1979) enumerated the following two species of *Ophiopogon*, *O. japonicus* and *O. caulescens* (Blume) Backer. He recorded *O. japonicus* from the Philippines. But, as far as the wild plants are concerned, his *O. japonicus* is nothing but *O. merrillii*, judging from his account. As aforementioned, *O. merrillii* and *O. japonicus* can be regarded as heterospecific, and *O. merrillii* is reducible to *O. intermedius*. In this sense, it can be said that *O. intermedius* occurs in the Philippines. I have seen no specimen of the spontaneous *O. japonicus* from the Philippines and from the other Malaysian regions. As for *O. caulescens*, Jessop reduced *O. wallichianus* to it. But these two species can be regarded as distinct, and *O. wallichianus* is reducible to *O. intermedius*, as stated earlier. In my observation, in the Malaysian regions covered by Flora Malesiana (cf. van Steenis 1985) *O. intermedius* occurs not only in the Philippines but also in Sumatra and Java (Fig. 10), and it also occurs in the Malay



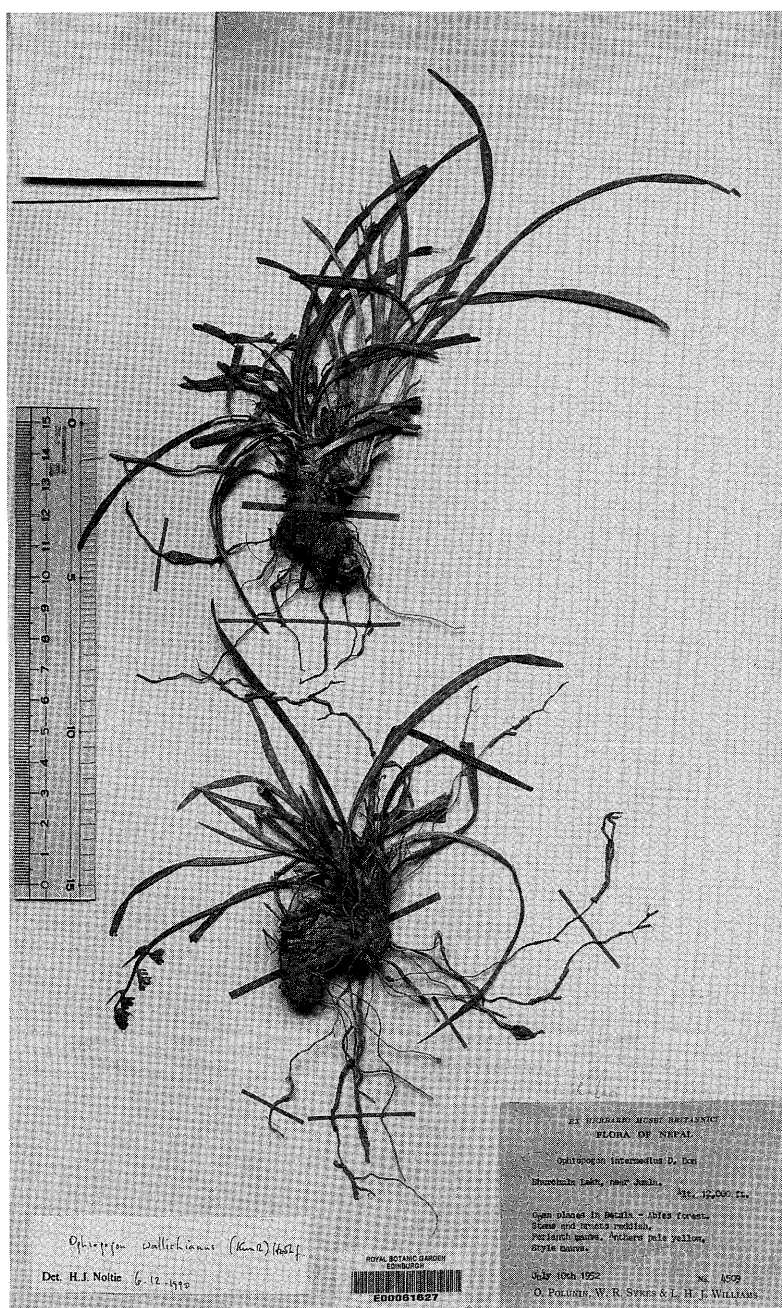


Fig. 7. *Ophiopogon intermedius* with a knobby rhizome (Nepal, O. Polunin et al. 4509, E). This specimen corresponds to *O. intermedius* var. *parviflorus* (= *O. parviflorus*) or to *O. zingiberaceus*, but these taxa can be reduced to *O. intermedius*.





Fig. 8. *Ophiopogon intermedius* from Bhutan (A. J. C. Grierson and D. J. Long 1019, E). This specimen may correspond to *O. bodinieri*, but the latter can be reduced to *O. intermedius*.

Peninsula of Thailand (cf. specimens cited below). *Chloopsis acaulis* Blume (1827) [=

*Ophiopogon acaulis* (Blume) Ridl.] described from Java may also be identical with

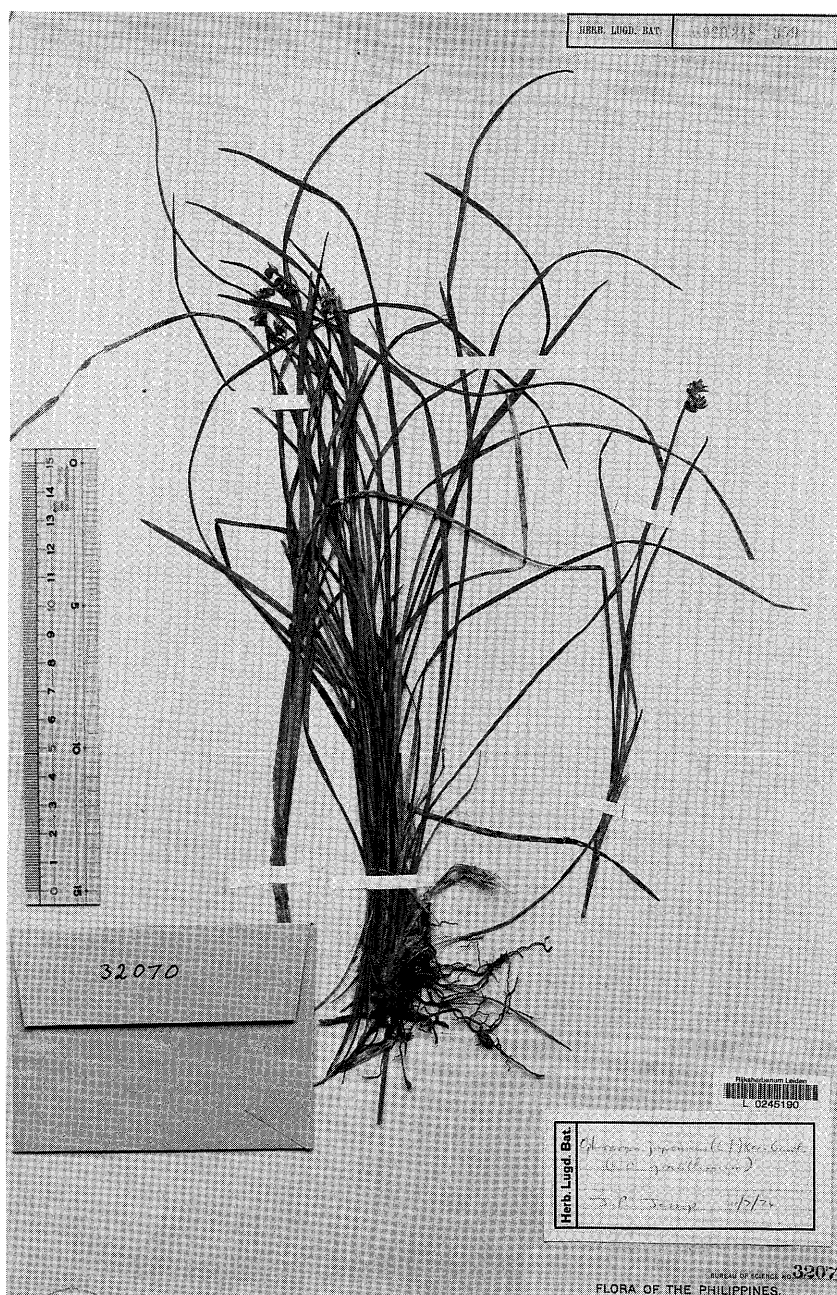


Fig. 9. *Ophiopogon intermedius* from the Philippines (J. K. Santos s.n. Bureau of Sci. 32070, L). This specimen corresponds to *O. merrillii*, but the latter is reducible to *O. intermedius*. This specimen has a stolon which is trimmed shortly.

*O. intermedius* [from Java, Blume (1827) described two species of *Chloopsis* (=

*Ophiopogon*), *C. acaulis* and *C. caulescens*. In my observation, two species of

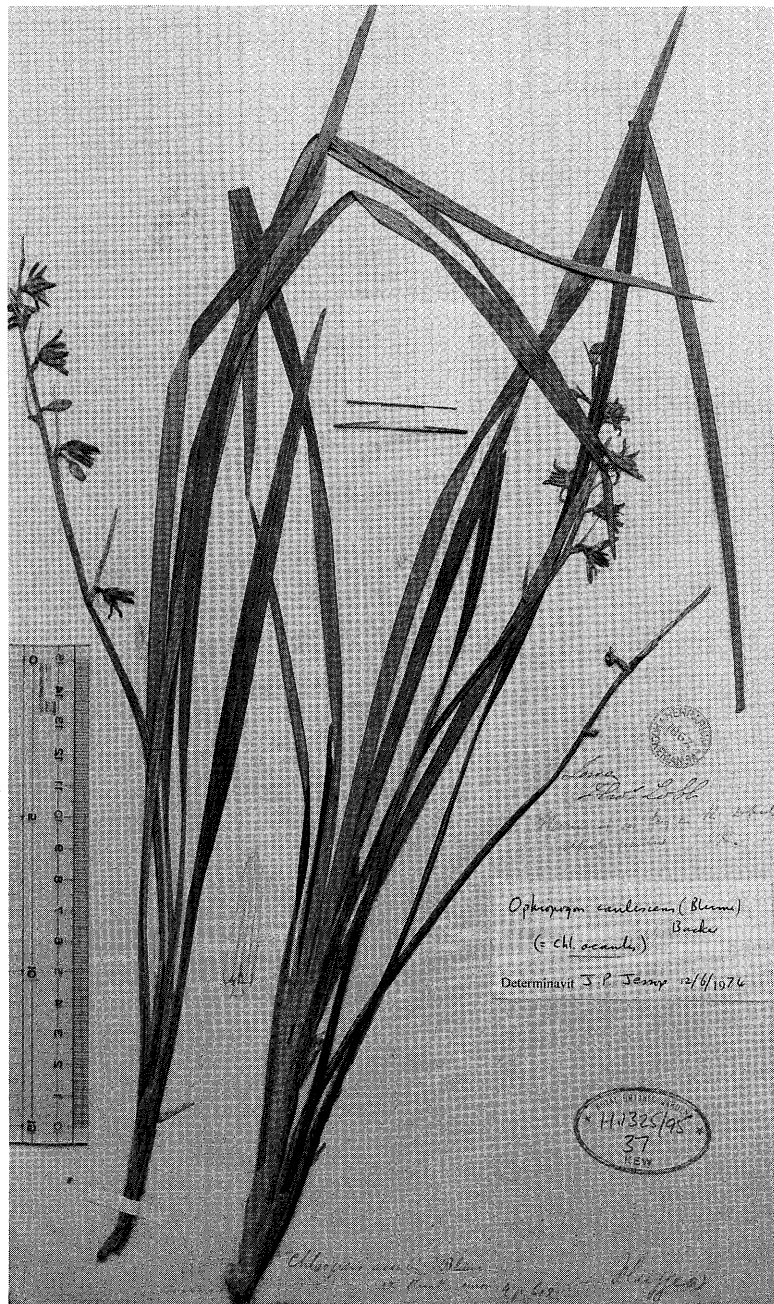


Fig. 10. *Ophiopogon intermedius* from Java (T. Lobb s.n., K). *Chloopsis acaulis* described by Blume (1827) from Java may be conspecific with *O. intermedius*.

*Ophiopogon* occur on this island, *O. intermedius* and *O. caulescens*. Blume's diagnosis of *C. acaulis* is too short to under-

stand fully its features. But, judging from its specific epithet '*acaulis*', this species seems to be equivalent to *O. intermedius*, since the

latter is usually rather acaulescent. In contrast, *O. caulescens* is caulescent, as noted below]. In these regions *O. caulescens* also occurs, and can be distinguished from *O. intermedius* by having prop roots, an elongate rhizomatous stem [*O. intermedius* from Sumatra often has a short stolon; e.g., Wilde & Wilde-Duyfjes 14244 (K), 15921 (K, L), 16090 (L), 16763 (K, L), 16871 (K), Meijer 6429 (L), Bünnemeyer 10129 (L)], and staminal filaments which are more or less united laterally (cf. Tanaka 2000, for *O. caulescens*). In addition, the anthers of *O. intermedius* from the Malay Peninsula, Sumatra and Java are longer than those of *O. caulescens* from the same regions (3.2–5.2 mm long in *O. intermedius*, 1.7–2.5 mm long in *O. caulescens*).

Koorders (1911) recorded *Ophiopogon japonicus* from Sumatra, citing a specimen collected there (Pringo Atmodjo 536, L). I examined this specimen and found that it can be identified as *O. intermedius*. It is also highly likely that his *O. japonicus* includes *O. caulescens*, judging from his description (cf. Tanaka 2000).

In China, Taiwan and Japan, *Ophiopogon intermedius* and/or its closely allied species (*O. formosanus* Ohwi, *O. scaber* Ohwi, *O. planiscapus* Nakai, etc.) occur. The results of a taxonomic survey on these species will be reported in my subsequent paper.

***Ophiopogon intermedius*** D. Don, Prodr. Fl. Nepal. 48 (1825); Royle, Ill. Bot. Himal. Mount. 1: 382, 384. 2: t.96, f.1 (1839); Hook.f., Fl. Brit. Ind. 6: 269 (1892), p.maj.p.; H. Hara, Fl. E. Himal. 409 (1966), 2: 166 (1971), Photo-Alb. Pl. E. Himal. 11, f.96 (1968), in H. Hara et al., Enum. Flow. Pl. Nepal 1: 75 (1978), p.maj.p.; Char. in Thai Forest Bull. Bot. 8: 92 (1974), p.p.; Anonym., Icon. Corm. Sin. 5: 528, t.7886 (1976); L.K. Dai & S.C. Chen (cf. Chen et al. 1993, for authorship) in F.T. Wang & Ts. Tang, Fl. Reipub. Pop. Sin. 15: 158, t.53,

f.1, 2 (1978), p.maj.p.; Mckean in Notes Roy. Bot. Gard. Edinb. 44: 189 (1986), p.p.; S.C. Chen in C.Y. Wu, Fl. Xizang. 5: 584, t.310, f.5 (1987); W.Z. Zeng in J.M. Xu, Fl. Sichuan. 7: 315, t.104, f.1-3 (1991), p.maj.p.; Noltie, Fl. Bhutan 3(1): 53 (1994).

[Figs. 1–10]

*O. spicatus* auct. non (Thunb.) Ker Gawl.: D. Don, Prodr. Fl. Nepal. 47 (1825).

*Chloopsis acaulis* Blume, Enum. Pl. Jav. 14 (1827), syn. nov.

*Flueggea intermedia* (D. Don) Schult. & Schult.f., Syst. Veg. 7: 310 (1829), 'Flüggea'; Kunth, Enum. Pl. 5: 306 (1850), 'Flüggea'.

*Ophiopogon japonicus* auct. non (Thunb.) Ker Gawl.: Wall., Catalog. 179, n.5139 (1832), saltem quoad 5139A, 5139B & 5139D; Koord., Exkurs.-fl. Java 1: 296 (1911), p.p., quoad specim. ex Sumatra; Merr., Enum. Philip. Flow. Pl. 1: 207 (1923); Jessop, Fl. Males. 9: 227 (1979), p.p., '(L.f.)'.

*O. indicus* Royle [Ill. Bot. Himal. Mount. 1: 382 (1839), nom. nud.] ex Wight, Ic. Pl. Ind. Or. 6: 26, t. 2050 (1853).

? *O. minor* Royle, Ill. Bot. Himal. Mount. 1: 382 (1839), nom. nud.

*Flueggea wallichiana* Kunth, Enum. Pl. 5: 303 (1850), 'Flüggea'.

*F. jacquemontiana* Kunth, Enum. Pl. 5: 304 (1850), 'Flüggea'.

? *F. dubia* Kunth, Enum. Pl. 5: 305 (1850), 'Flüggea'.

*Ophiopogon japonicus* (Thunb.) Ker Gawl. var. *intermedius* (D. Don) Maxim. in Bull. Acad. Imp. Sci. St. Pétersb. 15: 88 (1870), p.p., excl. syn. *O. umbraticola* Hance; L. Rodr. in Lecomte, Fl. Indo-Chine 6: 662 (1934) p.p. ?, auct. speciei '(L.f.)'.

*O. japonicus* (Thunb.) Ker Gawl. var. *wallichianus* (Kunth) Maxim. in Bull. Acad. Imp. Sci. St. Pétersb. 15: 89 (1870), p.p., auct. speciei '(L.f.)'.

*Flueggea japonica* (Thunb.) Rich. var. *intermedia* (D. Don) Baker in J. Linn. Soc. Bot. 17: 501 (1879), p.maj.p., 'Flüggea', auct. speciei '(L.f.)'.

*F. japonica* (Thunb.) Rich. var. *wallichiana* (Kunth) Baker in J. Linn. Soc. Bot. 17: 501 (1879), p.p., '*Flüggea*', auct. speciei '(L.f.)'.

*Ophiopogon wallichianus* (Kunth) Hook. f., Fl. Brit. Ind. 6: 268 (1892), p.p.; Ridl. in J. Fed. Mal. St. Mus. 8: 118 (1917); Anonym., Icon. Corm. Sin. 5: 528, t.7885 (1976); Noltie, Fl. Bhutan 3(1): 52 (1994).

*O. wallichianus* (Kunth) Hook.f. var. *pauciflorus* Hook.f., Fl. Brit. Ind. 6: 269 (1892), '*pauciflora*', syn. nov.

*O. intermedius* D.Don var. *occidentalis* Hook.f. et var. *gracilipes* Hook.f., Fl. Brit. Ind. 6: 269 (1892), syn. nov.

*O. intermedius* D.Don var. *macranthus* Hook.f., Fl. Brit. Ind. 6: 269 (1892), '*macrantha*', syn. nov.

*O. intermedius* D.Don var. *parviflorus* Hook.f., Fl. Brit. Ind. 6: 269 (1892), '*parviflora*', syn. nov.

*O. intermedius* D.Don var. *pauciflorus* Hook.f., Fl. Brit. Ind. 6: 269 (1892), '*pauciflora*', syn. nov.

*O. clarkei* Hook.f., Fl. Brit. Ind. 6: 268 (1892); H.Hara, Fl. E. Himal. 409 (1966), 2: 166 (1971); in H.Hara et al., Enum. Flow. Pl. Nepal 1: 75 (1978); Noltie, Fl. Bhutan 3(1): 54 (1994); syn. nov.

*O. bodinieri* H.Lév. in Mem. Pont. Acad. Rom. Nuov. Linc. 23: 343 (1905); L.K.Dai & S.C.Chen (cf. Chen et al. 1993, for authorship) in F.T.Wang & Ts.Tang, Fl. Reipub. Pop. Sin. 15: 162 (1978); S.C.Chen in C.Y.Wu, Fl. Xizang. 5: 584, t.310, f.3, 4 (1987); W.Z.Zeng in J.M.Xu, Fl. Sichuan. 7: 319 (1991); Noltie, Fl. Bhutan 3(1): 53 (1994), ut '*O. cf. bodinieri* H.Lév.'

*O. grandis* W.W.Sm. in Notes Roy. Bot. Gard. Edin. 13: 171 (1921); L.K.Dai & S.C.Chen (cf. Chen et al. 1993, for authorship) in F.T.Wang & Ts.Tang, Fl. Reipub. Pop. Sin. 15: 149, t.50, f.1, 2 (1978); S.C.Chen in W.T.Wang, Vasc. Pl. Hengduan Mount. 2: 2475 (1994); syn. nov.

*Mondo japonicum* (Thunb.) Farw. var.

*intermedium* (D.Don) Farw. in Amer. Midl. Nat. 7: 42 (1921), auct. speciei '(L.f.)'.

*M. japonicum* (Thunb.) Farw. var. *wallichianum* (Kunth) Farw. in Amer. Midl. Nat. 7: 42 (1921), excl. syn. *Chloopsis caulescens* Bl. & *O. longifolius* Decne., auct. speciei '(L.f.)'.

*M. dracaenoides* (Baker) Farw. var. *clarkei* (Hook.f.) Farw. in Amer. Midl. Nat. 7: 42 (1921).

*M. bodinieri* (H.Lév.) Farw. in Amer. Midl. Nat. 7: 42 (1921).

*Ophiopogon acaulis* (Blume) Ridl. in J. Bot. 63. Suppl. 122 (1925).

*Mondo intermedium* (D.Don) L.H.Bailey in Gent. Herb. 2: 25, f.12 (1929).

*M. wallichianum* (Kunth) L.H.Bailey in Gent. Herb. 2: 21, f.11 (1929).

*Ophiopogon merrillii* Masam. in Bull. Soc. Bot. Fr. 84: 90 (1937), '*merrilli*'; Jessop, Fl. Males. 9: 226 (1979), pro syn. sub *O. japonicus* (Thunb.) Ker Gawl., '(L.f.)'; syn. nov.

*O. parviflorus* (Hook.f.) H.Hara in J. Jpn. Bot. 40: 21 (1965); Fl. E. Himal. 409 (1966), 2: 167 (1971); in H.Hara et al., Enum. Flow. Pl. Nepal 1: 76 (1978).

*O. zingiberaceus* F.T.Wang & L.K.Dai in L.K.Dai & S.C.Chen (cf. Chen et al. 1993, for authorship) in F.T.Wang & Ts.Tang, Fl. Reipub. Pop. Sin. 15: 154 (sine descr. latin.), 252, t.51, f.4 (1978); W.Z.Zeng in J.M.Xu, Fl. Sichuan. 7: 315 (1991); syn. nov.

*O. caulescens* auct. non (Blume) Backer: Jessop, Fl. Males. 9: 226 (1979), p.p.

*O. lushuiensis* S.C.Chen in Acta Phytotax. Sin. 26: 141, t.1, f.3 (1988); Y.P.Yang in C.Y.Wu, Fl. Yunnan. 7: 679 (1997); S.C.Chen in W.T.Wang, Vasc. Pl. Hengduan Mount. 2: 2475 (1994); syn. nov.

Glabrous perennial herb. Rhizome highly variable in form; short, sometimes strongly knobby and stout, or elongate to various extent, to 22 cm or longer, 1–8 mm in diameter. Roots slender, to ca.2 mm in diameter, usually much branched, often forming small



fusiform tubers. Leaves fasciculate on apical part of stem, linear, acute at apex, tapering to base which tends to be vaginate with scarious wings, serrulate on margins, often glaucous beneath, 5–12-nerved, to 88 cm long, 2–10 mm wide. Scape more or less complanate with two edges, 7.5–50 cm long. Inflorescence racemose, 0.4–17 cm long. Flowers 1–3 in axils of bracts, secund, cernuous. Bracts lanceolate to linear-lanceolate, entire or minutely serrulate (-scabrous) on margins in upper part, scarious at margin, to 3.2 cm long. Pedicels (incl. basal stalky part of perianth) 1–16.5 mm long (true pedicels excluding perianth part, 0.6–8.2 mm long), articulate usually in or around middle (sometimes in lower or upper part). Perianth lobes 6, ovate, ovate-lanceolate, elliptic or ovate-oblong, usually obtuse at apex, (2.5–) 3–10 mm long, 1.2–5.5 mm wide. Stamens 6. Anthers lanceolate to linear-lanceolate, usually cordate at base, 1.3–6.5 mm long. Filaments short, 0.2–1.3 mm long. Pistil 1. Style subulate, occasionally relatively thick, 2.5–9 mm long. Seeds covered with sarcotesta, ellipsoid, blue to somber blue.

**Distribution:** India, Sri Lanka, Bangladesh, Nepal, Bhutan, China, Myanmar, Thailand, Cambodia, Vietnam, Indonesia (Sumatra, Java) and the Philippines. Also recorded from Pakistan and Kashmir (Stewart 1972).

**Representative specimens examined:**

**India.** Himachal Pradesh, Trela Chamba Distr., 2400 m, Jul. 23, 1964, N.C.Nair 32820 (TI); Simla, 7000 ft, Jul. 13, 1878, fl., H.Collett 6286A (K); Himal. Bor. Occa., 5–9000 ft, 1847 (?), fl., T.Thomson s.n. (**type of** *O. intermedius* var. *macranthus*, K); Kumaon, no date, fl., N.Wallich 5139D (K); Sikkim, 6–9000 ft, fl., J.D.Hooker s.n. (K); Sikkim, 7000 ft, Jun. 3, 1875, fl., C.B.Clarke 26686A (K); N Sikkim, Kabi, north of Gangtok, 1770 m, Jul. 31, 1992, fl., D.G.Long et al. 949 (E); Sikkim, Rungbee, 6000 ft, Jul. 21, 1870, fl., C.B.Clarke 12184 (**syntype of** *O. clarkei*, K); Sikkim, 10000 ft, Jul. 1882, fl., J.S.Gamble 10421 (K); Senchul, Sikkim Himalayas,

8000 ft, Jul.29, 1874, fl., W.J.Treutler 425 (K); Sikkim, without precise locality, 6–9000 ft, no date, fl., J.D.Hooker (K); Sikkim, Yoksum to Bakhim, ca.2000 m, Jun. 19, 1983, fl., B.N.Starling et al. 5 (K); Sikkim, 7000 ft, Jun. 3, 1875, fl., C.B.Clarke 26686A (K); Damthang–Tendong, Jun. 29, 1969, fl., H.Hara et al. (TI 69623); Darjeeling, 7300 ft, Aug. 15, 1875, fl., C.B.Clarke 26998C (**isolectotype of** *O. intermedius* var. *parviflorus*, K); Darjeeling, 7000 ft, Jul. 18. 1875, fl., C.B.Clarke 26821A (**lectoparatype of** *O. intermedius* var. *parviflorus*, K); Darjiling, no date, Griffith 5891 (K); Darjiling, 7000 ft, fl., J.S.Gamble 3172A (K); Darjeeling, G.H.Cave s.n., cult. at Bot. Gard. Edinburgh (221040: HAEM 172: 953), Jul. 9, 1986, fl. (E); Darjeeling, Peshok Road–Ghum, Jul. 7, 1969, fl., H.Hara et al. (TI 69624); Darjeeling, 'Ubay uri-dani', 2250 m, Jun. 23, 1969, fl., H.Hara et al. (TI 69636); Darjeeling, East Birch Hill Road, 2200 m, Jul. 24, 1969, fl., H.Hara et al. (TI 69629); Darjeeling, Tiger Hill, 2500 m, Jul. 30, 1984, fl. H.Hara et al. s.n. (TI); Assam, Khasi Hills, Mawphlang, ca.6000 ft, Jun. 22, 1953, fl., T.R.Chand 7838 (L); *ibid.*, Jul. 8, 1953, fl., T.R.Chand 7100 (L); *ibid.*, Jul. 6–12, 1953, T.R.Chand 7102 (L); *ibid.*, Aug. 30, 1954, fr., T.R.Chand 8090 (L); Assam, Khasi Hills, Mawphlang, ca.6000 ft, Jul. 6, 1953, fl., W.N.Koelz 33279 (L); Khasi Hills, Laitlynkot, 6000 ft, Jul. 9, 1949, fl., W.N.Koelz 23113 (L); Khasi Hills, Schillong, 5–6000 ft., Jul. 12, 1949, fl., F.Kingdon-Ward 18642 (BM); Khasi Hills, Schillong, 5000 ft, Jul.8, 1949, fl., F.Kingdon-Ward 18630 (BM); Khasia, 3500 ft, Oct. 23, 1871, fr., C.B.Clarke 16586 (**type of** *O. intermedius* var. *gracilipes*, K); Khasia, 4–6000 ft, no date, J.D.Hooker & T.Thomson s.n. (**type of** *O. wallichianus* var. *pauciflorus*, K); Assam, Lushai Hills, 7000 ft, Jan. 1928, fr., N.E.Parry 572 (2 sheets, K); Lushai Hills, Sangao, 4000 ft, Feb. 7, 1953, fr., W.N.Koelz 32647 (L); Assam, Delei Valley, 5000 ft, Jul. 24, 1928, fl., F.Kingdon-Ward 8449 (K); Sirhoi (India ?), 7–8500 ft, Jun. 5, 1948, fl., F.Kingdon-Ward 17613 (BM); Bombay, 1000 ft, fr., L.J. Sedgwick 7212 (K); Orissa, Dev Mali mountain, near Pottangi, Koraput distr., 4000 ft, Oct. 15, 1950, fr., H.F.Mooney 4157 (2 sheets, K); Nilglimis, no date, Schmidt 31 (BM); Madras, Nilgiris Distr., 7000 ft, Sept. 1886, fr., J.S.Gamble 18091 (BM); Madras, Nilgiris Distr., 7000 ft, Sept. 1886, late fl., J.S.Gamble 18153 (BM); Nilagiri, late fl.–fr., R.F.Hohenacker 955 (BM); S India, Pulney Hills, upper lake road and track to Doctor's Delight, fl., R.M.Thackeray s.n. (BM); Malabar Concan, no date, fl., Stocks et al. s.n. (BM); Peninsula Indiae Orientalis, Shevagerry Hills, Aug. 1836, fl., Wight 2820 (K, L); N Kerala, Palghat, Silent valley, alt. ca.1000 m, Jun. 28, 1976, fl., A.J.G.H.Kostermans

26224 (L); India, without precise locality, fl., Pesrottet 1142 (K).

**Sri Lanka.** Without precise locality, 3000 ft, fl., Gardner 904 (BM); Hakgala, Jan. 9, 1932, fl., N.D.Simpson 9065 (BM); no precise locality, fl., J.Macrae 197 (BM); Ceylon, without precise locality, Mar.12, 1819, fl., A.Moon 440 (BM); Horton Slains (?), ca.2000 m, Apr. 8, 1969, fr., Kostermans 23066 A (L); Nuwara Eliya, surrounding hills, 1850 m, Sept. 16, 1969, fl., C.F. & R.J.Beusekom 1392a (L).

**Bangladesh.** Silhet, no date, fl., N.Wallich 5139B (type of *Flueggea wallichiana*, K); East Bengal (Bangladesh ?), no date, Griffith 5893 (K).

**Nepal.** Phulchoke, SW of Kathmandu, 6500 ft, Jul. 23, 1965, fl., A.D.Schilling 565 (K); Nepalia, no date, fl., N.Wallich 5139A (K—probably not the type of *O. intermedius*); Bhurchula Lekh, near Jumla, 12000 ft, Jul. 10, 1952, fl., O.Polunin et al. 4509 (E); Tolo Gamja Khola, 3100 m, Jul. 16, 1953, fl., S.Nakao 195 (TNS 128622); above Dhorpatan, 10000 ft, Jul. 13, 1954, fl., J.D.A. Stainton et al. 3491 (TNS 128623); Okhaldhungagaon, south of Dhorpatan, 10000 ft, May 1, 1954, fl., J.D.A. Stainton et al. 368 (TNS 128624); Phucha, 9500 ft, May 24, 1952, fl., O.Polunin et al. 4160 (TNS 128625); Chauke—Tinjure Phedi—Tinjure—Dor, Jul. 6, 1972, fl., H.Kanai et al. (TI 723525, 723532); Blaju, Kathmandu, 1300 m, Jun. 16, 1967, fl., H.Hara et al. 3053 (TI); Minoshin Dhap—Mul Pokhari, near Taplejung, Oct. 29, 1963, H. Hara et al. (TI 6304386); Topke Gola—Shewaden, Jun. 28, 1972, fl., H.Kanai (TI 723531); Godavari—Phulchauki—Kathmandu, Jun. 23, 1967, fl., H.Kanai et al. 3089 (TI); Kathmandu, Godavari, May 28, 1969, fl., H.Hara et al. (TI 69630).

**Bhutan.** Ha, Dzong, 9200 ft, Aug. 17, 1949, fl., F.Luglow et al. 19619 (E); Thimphu Chu below Taba, ca.2300 m, May 14, 1979, fl., A.J.C.Grierson & D.G.Long 1019 (E, TI); Ritang, 8500 ft, Jun. 5, 1937, fl., F.Ludlow & G.Sheriff 3188 (E); Ritang Valley, 2000 m, Apr. 11, 1967, cult. at Univ. Tokyo, Jul. 28, 1967, fl., H.Hara s.n. (TI); Thimpu Distr., Dotena, alt., 2750 m, Jul. 20 1991, fl., H.J.Noltie 12 (E); Sankepong, 2580 m, Jul. 8, 1958, fl., S.Nakao 709 (KYO); Dukye Dzong, 2400 m, Jul. 8, 1958, S.Nakao 443 (KYO); Upper Mo Chu, Gaza Dzong, 2940 m, Sept. 15, 1984, I.Sinclair & D.Long 5027, cult. at Bot. Gard. Edinburgh (841797, LILI 178, 3239), Aug. 31, 1987, fl. (E); Forest slopes between Sengor and Sheridrang, ca.2980 m, Jul. 6, 1979, fl., A.J.C.Grierson & D.G.Long 2545 (TI); Dotanang—Tabab—Thimphu, May 28, 1967, fl., H.Kanai et al. 1473 (TI).

**Myanmar.** West Central Burma, Mt. Victoria, northern ridge and Ranchi camp, 8–9000 ft, Jun. 7, 1956, fl., F.Kingdon-Ward 22362 (in part; only the left

sample on the sheet is *O. intermedius*) (BM); Mt. Victoria, eastern ridge, ca.9000 ft, Jun. 18, 1956, fl., F.Kingdon-Ward 22381 (E); West Central Burma, Mindat Ridge, ca.7500 ft, May 26, 1956, fl., F.Kingdon-Ward 22293 (BM); N Burma. North Triangle (Hkinlum), Kachin state, 4500 ft, Jul. 29, 1953, fl., F.Kingdon-Ward 21208 (BM, C); North Triangle (Camp 2, Tama Bum), 5–7000 ft, Jun. 16, 1953, F.Kingdon-Ward 20983 (BM); N Burma, Kachin State, Sumprabum subdivision, eastern approaches from Sumprabum to Kumon Range, Janrawng Bum on the banks of the Hpuginhka river, 7–8000 ft, Jan. 1962, J.Keenan et al. 3232A (K); ibid., Janrawng Bum, 7–9000 ft, Jan. 7, 1962, fr., J.Keenan et al. 3155 (K); Myitkyina, 1 mile from Kangfang, Sept. 5, 1938, fl., N.M.Pa 17402 (K); Myitkyina, Laikam-Fengshuiling, 8000 ft, Apr. 22, 1938, buds, C.W.D.Kermode 17207 (K); Maymyo Plateau distr., 3000 ft, Aug. 8, 1925, fl., Forest Botanist, Burma 1765 bis (2 sheets, K); Maymyo Plateau, 3500 ft, Jul. 28, 1911, fl., J.H.Lace 5375 bis (2 sheets, K); S. Shan States, Möng Pawn, Laikka (?) border, 6000 ft, Jul. 10, 1911, fl., W.A.Robertson 362 (K).

**China.** Tibet (Xizang). Bomi, 2050 m, Jun. 20, 1980, fl., C.C.Ni et al. 113 (PE); Xizang, Chayu, 2100 m, Jul. 24, 1980, fl., C.C.Ni et al. 702 (PE); Yunnan. Laktang, 7000–8000 ft, Jun. 16, 1919, fl., F.Kingdon-Ward 3222 (E); Hills to the east of Tengyueh, 6–7000 ft, May 1912, fl., G.Forrest 7961 (syntype of *O. grandis*, E); Jang-tzow Shan, Shweli-Salween divide, 7–8000 ft, Aug. 1919, fl., G.Forrest 18319 (syntype of *O. grandis*, E); Shweli-Salween divide, 9000 ft, Jun. 1924, fl., G.Forrest 24484 (E); W Yunnan, Tengchong, 2600–2800 m, May 21, 1964, buds, S.K.Wu 6780 (KUN 0224704); NW Yunnan, Lushui, 2850 m, Aug. 2, 1978, fr., Nu-jiang Exped. Team 1811 (KUN 0224697); NW Yunnan, Dayou to Mashiding, 1930–2500 m, Jul. 31, 1979, fl., Nu-jiang Exped. Team (collected by Q.Lin) 791884 (KUN 0224700); Guizhou (Kouy-Tcheou), Mont. de Lou-tsong-koan, Jul. 12, 1897, fl., E.Bodinier 1667 (lectotype of *O. bodinieri*, E).

**Thailand.** NE distr., Phukradung, Loei, 1040 m, May 7, 1951, fl., T. Smitinand 313 (P); Phukradung, Loei, Deca. 24, 1971, fr., C.F.van Beusekom et al. 4575 (L); E distr., Nakhon Ratchasima, Khao Yai National Park, Khao Kieo, 1200 m, Oct. 17, 1969, fr., C.F.van Beusekom & C.Charoenphol 1680 (P); Khao Khièo, Saraburi, 1000 m, Jun. 8, 1979, fl., J.E.Vidal & Y.Vidal 6367 (L, P); Doi Hua Mok (?), ca.1430 m, Jun. 8, 1933, fl., H.B.S.Somett 799 (L); Khaw Din near Sgiracha (?), ca.40 ft, Dec. 10, 1927, fr., D.J.Collins 1813 (K); Kao Kuap, Krat. May 24, 1930, fl.or fr., Put 2999 (BM, ABD); Penisular, Nakhon Si

Thammarat, Khao Luang, ca.1700 m, May 24, 1968, fl. or fl.-fr., C.F.van Beusekom & C.Phengkhilai 990 (L, P).

**Cambodia.** Cochinchina, Camchay, Kampot, 900 m, May 1874, L.Pierre 6679 (not *O. pierrei*, P).

**Vietnam.** Dalat, Jun. 10, 1921, fl., B. Hayata 219 (TI); Chapa, Jun. 27, 1917, B.Hayata s.n. (TI).

**Indonesia:Sumatra.** Korinchi Peak, Jogg at Attah, 7300 ft, Apr. 29, 1914, fl. & fr., H.C.Robinson & C.B.Kloss (K); Gajoe en Alas Landen, Jul. 15, 1904, fr., R.Pringo Atmodjo 536 (2 sheets, L); N Sumatra, Gaju & Alas Lands, Mt. Kemiri, 1500–2000 m, Mar. 6, 1937, fl., C.G.G.J.van Steenis 9530 (L); N Sumatra, 1750–1900 m, Nov. 14, 1929, fr., J.A.Lörzing 15670 (L); W Sumatra, Mt. Kerintji, Pesisir Selatan Kerintji, ca.1800 m, Jul. 31, 1956, fl., W.Meijer 6429 (L); G. Koerintji, ca.2200 m, May 6, 1920, fl., Bünnemeyer 10129 (L); N Sumatra, Gunung Leuser Nature Reserve, Atjeh, W.J.J.D.de Wilde & B.E.E.de Wilde-Duyfjes 13800 (L), 14204 (L), 14244 (K,L), 15921 (K,L), 16090 (L), 16763 (K, L), 16871 (L). **Java.** Without precise locality, no date, fl., T. Lobb s.n. (K).

**Philippines.** Luzon. Mt. Pulog, 2350–2450 m, Jan. 22, 1968, fr., M.Jacobs 7045 (C, K); Mt. Pulog, Benguet Prov., Feb. 24–27, 1925, fr., M.S.Clemens 5164 (UC); Mt. Data, Lepanto, Nov. 1905, fl., E.D.Merrill 4601 (K); Mt. Data, Lepanto, Sept. 1921, fr., M.Ramos & G.Edaño s.n., Bureau of Sci. 40244 (K, UC); Mt. Data, Bontoc Prov., 7000 ft, Dec. 25–29, 1928, fr., M.S.Clemens 18713 (UC); Mt. Data, Dec. 24–31, 1925, fr., M.S.Clemens 16261 (UC); Mt. Data, 2000 m, May 14, 1961, M.L.Steiner 2174 (L); Mt. Santo Tomas, Benguet Prov., Sept. 1925, fr., F.A.McClure 16040 (UC); Mt. Pinatubo, Camp Stotsenburg, Pampanga Prov., May 1927, fl., A.D.E.Elmer 22346 (UC); Benguet Prov., Dec. 24–31, 1925, fr., M.S.Clemens 16449 (UC); Pauai, Benguet subprov., Apr.–Jun., 1918, fl., J.K.Santos s.n., Bureau of Sci. 32070 (L); Pauai, ca.2100 m, Benguet Prov., Jun., 1909, buds, R.C.McGregor s.n., Bureau of Sci. 8429 (L).

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## References

(See also those cited in the text)

- Bailey L. H. 1929. The case of *Ophiopogon* and *Liriope*. *Gentes Herbarum* 2(1): 1–37.
- Baker J. G. 1879. *Flueggea* (incl. *Ophiopogon spicatus*, p.501). *J. Linn. Soc.* 17: 500–503.
- Blume C. L. 1827. *Chloopsis acaulis*, *C. caulescens*. In: *Enumeratio Plantarum Javae*, p. 14. J. W. van Leeuwen, Lugduni Batavorum.
- Chen S. C., Li J. L., Zhu X. Y. and Zhang Z. Y. 1993. *Bibliography of Chinese Systematic Botany*. Guangdong Science and Technology Press, Guangzhou.
- Dai L. K. 1978. *Liriope*. In: Wang F. T. and Tang Ts. (eds.), *Flora Reipublicae Popularis Sinicae* 15: 123–130, 251.
- and Chen S. C. 1978. *Ophiopogon scaber*, p. 158. *O. clarkei*, p. 163. In: Wang F. T. & Tang Ts. (eds.), *Flora Reipublicae Popularis Sinicae* 15.
- Hara H. 1984. Comments on the East Asiatic plants (13). *J. Jpn. Bot.* 59: 33–41.
- Jessop J. P. 1979. *Ophiopogon*. In: Steenis C. G. G. J. van (ed.), *Flora Malesiana*, ser. I, 9: 225–227.
- Ohwi J. 1934. *Mondo formosanum* (*Ophiopogon formosanus*), p. 45. *M. scabrum* (*O. scaber*), p. 46. *Repert. Sp. Nov. Fedde* 36.
- 1943. *Ophiopogon formosanus*, *O. scaber*. *Acta Phytotax. Geobot.* 12: 113.
- 1965. *Ophiopogon japonicus*. In: Meyer F. G. and Walker E. H. (eds.), *Flora of Japan* (in English), p. 309. Smithsonian Institution, Washington, D.C.
- Steenis C. G. G. J. van (ed.). 1985 (reprint; 1st ed. in 1950). *Flora Malesiana*, Ser. I, 1. Koeltz Scientific Books, Koenigstein.
- Stewart R. R. 1972. *Ophiopogon intermedius*. In: *An Annotated Catalogue of the Vascular Plants of West Pakistan and Kashmir*, p. 60. In: Nasir E. and Ali S. I. (eds.), *Flora of West Pakistan*. University of Karachi, Karachi.
- Tanaka N. 2000. Taxonomic notes on *Ophiopogon* of South Asia V. *J. Jpn. Bot.* 75: 69–79.
- Thunberg C. P. 1784. *Convallaria japonica* β. *Flora Japonica*, 140–141. In *Bibliopolio* J. G. Mülleriano, Lipsiae.
- Wallich N. 1832. *Ophiopogon japonicus* Ker. In: *A numerical list of dried specimens of plants in the East India Company's Museum*, p. 179, n. 5139. London.
- Wang F. T. and Tang T. 1951. A new *Liriope*, long in cultivation but hitherto confused, with a key to species of the genus. *Acta Phytotax. Sinic.* 1: 331–334.
- Wright C. H. 1903. *Liriope*. In: Forbes F. B. and Hemsley W. B. (eds.), *An enumeration of all the*

plants known from China proper, etc. J. Linn. Soc. Bot. 36: 79–80.

Zhu Z. Y. 1994. *Ophiopogon xiaokuai* Z.Y.Zhu, p.

205. In: Some new taxa of *Ophiopogon* from Sichuan. *Guihaia* 14: 205–208.

## 田中教之：南アジア産ジャノヒゲ属の分類学的検討 VII

*Ophiopogon intermedius* D. Don は、植物体の全体的な大きさや各部の変異（花の各部の大きさや形、葉の長さや巾、地下茎の形状など）が大変大きい種である。これとは別種として記載されている種でも、広い地域から得られた多くの標本を比較検討してみると、本種と変異が連続してしまう場合や、本種との差異があまり顕著でない場合が少なからずある。本報告では新たに次の6種を *O. intermedius* と同種として扱った：*O. clarkei*, *O. grandis*, *O. lushuiensis*, *O. merrillii*, *O. zingiberaceus*, *O. acaulis*. *O. wallichianus*, *O. bodinieri*, *O. indicus* および *Flueggea jacquemontiana* は、本報告以前に、*O. intermedius* と同種として扱われたことのある種であるが、筆者もこの扱いに賛成である。*Flueggea dubia* と *O. minor* (nom. nud.)（これらも *O. intermedius* と同種として扱われたことがある）も *O. intermedius* と同種の可能性が十分ある。*Ophiopogon parviflorus* (Hook.f.) H. Hara (= *O. intermedius* D. Don var. *parviflorus* Hook.f.) は *O. intermedius* と同一分類群としてここでは扱った。Hooker (1892) によって記載された *O. intermedius* と *O. wallichianus* の他の変種も、*O. intermedius* と同一分類群として扱った。D. Don の *Prodromus Florae Nepalensis* (1825) にある *O. spicatus* も、*O. intermedius* と同種であると思われる（これらを同種と見なす見解は既にある）。*Flora Malesiana* (series I, vol. 9, part 1; 1978) において、Jessop は、本属の種として *O. japonicus* と *O. caulescens* の2種を挙げている。彼はフィリピンから記載された *O. merrillii* を *O. japonicus* と同種として扱い、*O. japonicus* がフィリピンに分布するとしているが、*O. merrillii* は上記のように *O. intermedius* と同種と見なすことができ、*O. japonicus* とは別種と見ることができる。従って、フィリピンには *O. intermedius* が分布していると言える。フィリピン産の（野生の）*O. japonicus* の標本は筆者は見

ないし、同地にそれが自生するという確証は今のところない。また、Jessop は同文献 (1978) において、*O. wallichianus* と *O. caulescens* とを同種としているが、前者は上記のように *O. intermedius* と同種として見なすことができる一方、*O. caulescens* とは別種と見なせる。筆者の観察では、*O. intermedius* はフィリピンその他、*Flora Malesiana* が扱っている地域では、スマトラとジャワに分布し、その隣接地のタイ領マレー半島にも分布している。これらの地域には、*O. caulescens* も分布している。また、Koorders (1911) の言う *O. japonicus* には一部スマトラ産の *O. intermedius* が含まれていることが分かった。

なお、*Ophiopogon intermedius* の原記載 (Don 1825) には一部事実と合致しない箇所があり、このことについて若干の意見を述べた。また、*O. intermedius* の基準標本は Bailey (1929) が指摘しているように、Wallich の標本 5139A [Wallich's Catalogue (1832) の同番号に相当する標本] である可能性は極めて高いが、Kew にあるその標本と原記載とは一致しない点がある。*O. intermedius* の記載の元となった基準標本の確定については今後さらに検討を要する。しかし、Kew にある Wallich 標本 5139A は、*O. intermedius* の原記載と格別大きな差異（別種としなければならないような差異）があるわけではないので、*O. intermedius* として同定しうる。

*O. intermedius* はインド、スリランカ、バングラデシュ、ネパール、ブータン、中国、ミャンマー、タイ、カンボジア、ベトナム、インドネシア（スマトラ、ジャワ）、フィリピンに分布することを今回確認した。標本はまだ検していないがパキスタン、カシミール地方からも報告がある。中国、台湾、日本における本種あるいはその近縁種についての検討結果は別の機会に改めて報告したい。

(帝京大学文学部教育学科)